IN THE CLAIMS

1. (currently amended) A dynamic virtual channel management apparatus, comprising:

a detection unit which detects an active virtual channel used by an arriving ATM cell; [[and]]

a management memory unit which manages management information about the active virtual channel detected by the detection unit for each virtual channel, the management memory unit including a translation table and a frame management table, the translation table converting a virtual channel identifier contained in a cell header of the cell into an internal management number for internal management, the frame management table storing information for frame-by-frame processing of each virtual channel in such a manner as to correspond to the internal management number; and

a first registration unit that registers a virtual channel identifier of an arriving cell into the management memory unit when the virtual channel identifier of the arriving cell is not managed by the management memory unit,

wherein processing on a frame-by-frame basis is applied to cells having [[a]] the virtual channel identifier that matches that of the active virtual channel managed by the management memory unit.

2. – 3. (canceled)

4. (currently amended) The dynamic virtual channel management apparatus as claimed in claim [[3]] 1, comprising:

an internal management number writing unit which writes the internal management number into the cell header of the cell; and

an internal management number reading unit that retrieves the internal management number from the cell header of the cell, and uses the retrieved internal management number for referring to the frame management table.

5. (currently amended) The dynamic virtual channel management apparatus as claimed in claim [[3]] 1, wherein the internal management number is transmitted in parallel with the cell data, and is used for referring to the frame management table.

6. (currently amended) The dynamic virtual channel management apparatus as claimed in claim [[2]] 1, comprising:

a timer unit which is provided for each virtual channel managed by the management memory unit;

a timer start unit which starts the timer unit each time a head cell of a frame arrives; and

a first deletion unit which deletes from the management memory unit an entry of a virtual channel that corresponds to a last cell of a frame arriving after the timer unit indicates a time-out.

7. (currently amended) The dynamic virtual channel management apparatus as claimed in claim [[2]] 1, comprising:

a timer unit which is provided for each virtual channel managed by the management memory unit;

a timer start unit which starts the timer unit each time a head cell of a frame arrives; and

a ~~second~~ first deletion unit which deletes an entry of a virtual channel from the management memory unit when a corresponding timer unit indicates a time-out before a head cell of a next frame arrives.

8. (original) The dynamic virtual channel management apparatus as claimed in claim 7, wherein the timer unit comprises:

a shifting unit which shifts virtual channel information;

a frame number counting unit which counts a number indicative of how many frames are shifted by the shifting unit on a virtual-channel-to-virtual-channel basis;

a count-up unit which counts up the frame number counting unit of a virtual channel which corresponds to a head cell of a frame that arrives; and

a count-down unit which counts down the frame number counting unit of a virtual channel which corresponds to virtual channel information that is shifted-out from the shifting unit,

wherein a virtual channel for which the count number of the frame number counting unit becomes zero is given a time-out.

9. (currently amended) The dynamic virtual channel management apparatus as claimed in claim [[2]] 1, comprising a ~~third~~ first deletion unit which deletes from the management memory unit an identifier of a virtual channel of a last cell of a frame whose arrival is detected.

10. (currently amended) The dynamic virtual channel management apparatus as claimed in claim [[2]] 1, comprising a disapproving unit that disapproves registering of a virtual channel

identifier of a cell into the management memory unit if a cell belonging to a virtual channel that is not managed arrives while the management memory unit is fully occupied.

11. (currently amended) The dynamic virtual channel management apparatus as claimed in claim [[2]] 1, comprising a first registration determination unit which determines whether a virtual channel is allowed to be registered into the management memory unit based on a cell holding-up volume of a cell memory at a later stage and a threshold when a cell having a virtual channel identifier that is not managed by the management memory unit arrives.

12. (currently amended) The dynamic virtual channel management apparatus as claimed in claim 7, comprising a ~~fourth~~ second deletion unit which finds a virtual channel that is close to a time-out of the timer unit, and forcing the found virtual channel to be given a time-out, and deletes an entry of the found virtual channel from the management memory unit when a cell having a virtual channel identifier that is not managed arrives while the management memory unit is fully occupied.

13. (currently amended) The dynamic virtual channel management apparatus as claimed in claim [[2]] 1, comprising:

a VC number counting unit which counts a number indicative of how many virtual channels are managed by the management memory unit on a virtual-path–to-virtual-path basis; and

a second registration determination unit which allows a registration into the management memory unit when a cell having a virtual channel identifier that is not managed by the

management memory unit arrives only when the number counted by the VC number counting unit corresponding to a virtual channel of an arriving cell is not above a predetermined value while a number indicative of how many entries are present in the management memory unit exceeds a predetermined value.

14. (currently amended) The dynamic virtual channel management apparatus as claimed in claim [[2]] 1, comprising:

a signaling extraction unit which extracts a signaling message cell;

a registration unit which registers a virtual channel identifier of a connection into the management memory unit when a signaling message to establish the connection is detected by the signaling extraction unit; and

a ~~fifth~~ first deletion unit which deletes the virtual channel identifier of the connection from the management memory unit when a signaling message to release the connection is detected by the signaling extraction unit.

15. (currently amended) The dynamic virtual channel management apparatus as claimed in claim [[2]] 1, wherein the management memory unit is implemented as a CAM.

16. (original) The dynamic virtual channel management apparatus as claimed in claim 1, comprising:

a cell memory which stores cells;

a frame management unit which keeps a record of each virtual channel registered in the management memory unit as to whether a head cell of a frame was passed for storage into the cell memory or discarded,

wherein a determination is made by referring to the frame management unit as to whether to pass or discard subsequent cells of said frame.

17. (original) The dynamic virtual channel management apparatus as claimed in claim 16, wherein the frame management unit keeps a record of whether a cell of a given frame is discarded after a head cell of the given frame is read from the cell memory while a last cell of the given frame has not been inputted into the cell memory, and wherein if the cell of the given frame is discarded, following cells except for the last cell of the given frame are discarded.

18. (original) The dynamic virtual channel management apparatus as claimed in claim 16, comprising:

a cell quantity counting unit that counts a number indicative of how many cells have arrived for each virtual path;

a marking unit which marks a cell on a frame-by-frame basis when a counted number of the cell quantity counting unit exceeds a predetermined number, and

a discarding unit which discards cells that are marked when an accumulated cell amount in the cell memory exceeds a threshold.

19. (original) The dynamic virtual channel management apparatus as claimed in claim 1, comprising:

a plurality of cell memories which store cells for respective priority levels; and

a distribution unit which distributes arriving cells to a corresponding cell memory according to a priority level predetermined for each virtual channel.

20. (original) The dynamic virtual channel management apparatus as claimed in claim 19, wherein the plurality of the cell memories output the stored cells in a descending order of the priority levels.